October 5, 2005

VIA ELECTRONIC MAIL AND HAND-DELIVERY

Diane Beaulaurier,
Regional Water Quality Control Board, Central Valley Region
11020 Sun Center Drive, #200
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Email: dbeaulaurier@waterboards.ca.gov

RE: DOW AGROSCIENCES COMMENTS ON THE DRAFT ENVIRONMENTAL DOCUMENT CONCERNING THE PROPOSED BASIN PLAN AMENDMENT FOR THE CONTROL OF DIAZINON AND CHLORPYRIFOS DISCHARGES AND PESTICIDE RUNOFF INTO THE LOWER SAN JOAQUIN RIVER

Dear Ms. Beaulaurier:

On behalf of Dow AgroSciences ("DAS"), we submit the following summary comments on the 160-page amendments (and several hundred page appendix) to the Water Quality Control Plan for the Sacramento River and San Joaquin River Basin Plan and TMDLs.

DAS is the registrant of chlorpyrifos, an important pest control material widely relied upon by California agriculture. Chlorpyrifos has been linked to water quality concerns in urban and agricultural discharge and DAS has worked closely with the Regional Board and the Department of Pesticide Regulation ("DPR") over several years to monitor and analyze pesticide residue data, to address the areas of exceedence and to develop: a) application; b) in-field management practices; and c) label amendments and restrictions all designed to address those occurrences. Consequently, water quality exceedences have significantly reduced in level and frequency. DAS is also closely coordinating with the agricultural waiver watershed coalitions regarding their monitoring of agricultural return flow and identification of management practices to address water quality issues.

DAS appreciates the recent workshop the Regional Board held to introduce and explain this proposed Basin Plan/TMDL document; however, the October 5 comment

date is far too quick to allow full technical review of all of these significant new concepts, standards and data. We have made arrangements to meet with Regional Board Staff so as to mutually review some of the relevant data; however, that will not be able to occur prior to the submittal deadline. Consequently, these comments will be brief and we will likely submit additional comments as our review and analysis continues.

Page 14/15: Sections 1.2.2 and 1.2.3: Chlorpyrifos use has dramatically reduced in urban use (as a result of DAS removing such uses from the label) and has also reduced in agricultural use due to new label restrictions, new management practices and agricultural pest control use changes. The Basin Plan document, itself indicates "chlorpyrifos use…has declined significantly since 1995," and "from 1995 to 2002, chlorpyrifos use decreased by 26% in almonds, 91% in cotton and 64% in alfalfa."

Page 36: Section 3.1: DAS supports the statements that the appropriate watershed policy should be to implement a watershed-based approach with participation of stakeholders and direct focus on the most important water quality problems.

Page 39: Section 3.2: DAS supports reliance on the Management Agency Agreement between the Water Boards and Department of Pesticide Regulation.

Page 40: Section 3.2: DAS supports having the Basin Plan/TMDL satisfy the requirements of the Bay Protection Toxic Hot Spot clean-up program. Chlorpyrifos is listed as a Toxic Hot Spot in only four limited agricultural drain segments and these listings were based on historic data, and because agricultural chemical use and chlorpyrifos use have been changing, the transient nature of the events monitored are not likely to be relevant any longer.

Page 44 through Page 50, Section 4.3.1. and Table 4.1, page 147 re Water Quality Objectives:

Nowhere in this section is there a justification for selecting the CDFG chlorpyrifos criteria instead of the final chlorpyrifos US EPA ambient water quality criteria. The CDFG criteria are more protective, but Staff does not explain why greater protection is necessary relative to the US EPA criteria. Both were calculated using US EPA Water Quality Criteria methodology, but only the final chlorpyrifos US EPA criteria underwent public notice and comment procedures. Consideration of new *Ceriodaphnia dubia* toxicity data in calculating the criteria, as was done by CDFG, does not result in an improved criterion relevant to protecting California water bodies,

as *C. dubia* is not an important component of the lotic freshwater invertebrate community in the State. However, this species is very sensitive to chlorpyrifos and serves to drive down the criteria values relative to the final US EPA criteria.

DAS asserts that if numerical Water Quality Objectives ("WQOs") are to be set for chlorpyrifos that should also be the case for diazinon. DAS' interest is exclusively chlorpyrifos and diazinon is solely the business of Makhteshim Agan of North America, Inc. ("MANA"); however, because this amendment proposes to impose standards based on additivity of both materials, we do have an interest in the Basin Plan having parallel and equal status objectives for each chemistry. In that regard, we believe MANA is submitting adequate information for the Board to implement a WQO for diazinon and we support the Board's setting a diazinon WQO consistent therewith.

Page 55: Section 4.3.1: Additive Toxicity

With respect to the additive toxicity policy, the use of water quality criteria in the denominator of the terms added together to obtain a sum of toxicity is not supported by any known published study or US EPA guidance. This procedure is highly suspect, as it combines values based on differing numbers of tests conducted on different species that are then adjusted by application of a safety factor prior to being used in the additive toxicity formula. Selecting comparable Genus Mean Acute Values would be a more reasonable choice.

Page 58: Section 4.3.4: DAS agrees that the improvements in residue levels over recent years, coupled with a modestly amended Basin Plan will be effective in improving water quality to protect beneficial uses of water of the Region so long as there is reasonable lead time to implement its terms.

Page 71/74: Section 4.4.11: DAS concurs that management practices and use restrictions have resulted in important improvements in water quality and with increased implementation and refinement, they will achieve adequate load allocations in the future.

Page 77 – 80: Section 4.4.15: These pages discuss establishing a compliance deadline, however, the draft inappropriately selects 2008, rather than the more reasonable and practical date of 2013 as the deadline. There is no advantage in setting an unreasonable deadline. This Basin Plan will not even be final until late

2006, thereby making 2007 the first fully implementable year. A deadline two years thereafter deadline is inappropriate and unreasonable. Furthermore, premature deadlines that do not allow for well considered solutions will likely result in pesticide substitution decisions outside the context of Integrated Pest Management that could lead to comparable or more significant water quality concerns.

Page 98-99: Section 5: This section analyzes the projected annual cost of compliance with the aggressive components of the TMDL/Basin Plan amendments. The analysis states: "The basinwide combined costs of alternative pest management practices, alternative water management practices, and monitoring and compliance activities for the major crops that use diazinon and chlorpyrifos are estimated to range from $0.6 million to $20 million. 2004 dollars were used and no adjustments were made for inflation."

These annual costs are extraordinary and reflect that there are extensive and excessive components of these amendments. On Page 98, the report suggests such costs would be addressed by bonds, surcharges, taxes, fees, appropriations from the Legislature, and land retirements. These are extreme and perhaps impossible to implement measures which also reflect the extensiveness of some of the provisions and timelines.

Page 129: Figure 1.7: In Figure 1.7 of the Draft Staff Report (attached), it is clear that for the period 1996 through 2005, there is no more than one exceedence of the US EPA acute criterion of 0.083 µg/L. Therefore, by this objective no water quality impairment is indicated.

Moreover, the monitoring data come from grab samples extracted by the liquid-liquid partition (LLP) method using an organic solvent such as methylene chloride.[1] Because the sample is not filtered or centrifuged before extraction, the solvent strips chemical from any suspended particulates that may be present, as well as from dissolved organic carbon (DOC). As a result, the reported concentration represents the sum of the following three fractions: that truly dissolved in the river water, that sorbed to suspended particulates, and that associated with DOC. Because only the

[1] Calanchini, H.J., Johnson, M.A. 2005. A summary of the 2005 TMDL Monitoring for selected pesticides in the Northern San Joaquin Basin, California March – August 2005. Unpublished report of the University of California, Davis for the Central Valley Regional Water Quality Control Board, 2005-SJR-Irr-rpt_091405.pdf.

truly dissolved fraction is comparable to the conditions used in standard laboratory toxicity testing, comparison of the monitoring results obtained by LLP with a water quality criterion based on laboratory testing is not correct, as it overestimates the bioavailable fraction that could result in impaired water quality.

As reported in a recent peer reviewed journal article [2], Southern California creek water spiked with bifenthrin and permethrin had greatly differing measured concentrations using standard LLP and solid phase microextraction (SPME) with no centrifugation.

Table 2. from Liu et al. 2004. Environ Toxicol Chem, 23:7-11 - no centrifugation, ug/L							
							Koc scaling
							factor
	San Diego Creek		Bonita Creek		San Diego Creek	Bonita Creek	Mean
	LLP	SPME	LLP	SPME	LLP/SPME	LLP/SPME	LLP/SPME
Bifenthrin	45.3	0.2	43.2	0.31	227	139	
cis-Perm	43.2	0.32	42.5	0.42	135	101	137
trans-Perm	42.5	0.35	44.1	0.46	121	96	

The authors' interpretation of these data is that LLP extracts from water, DOC, and suspended sediment, while SPME samples only from water. This is the true bioavailable fraction that can cause toxicity. The addition to the table suggests that reported bifenthrin and permethrin water/organic carbon partition coefficients can be scaled by a factor of 137.

Using average Koc values for bifenthrin, 237000, permethrin, 277000,[3] (mean = 257000) and chlorpyrifos, 8498,[4] an estimate of a comparable bioavailability measurement factor for chlorpyrifos can be calculated:

$$\frac{8498}{257000} \times 137 = 4.5$$

[2] Liu, W., Gan, J.J., Lee, S., Kabashima, J.N. 2004. Phase distribution of synthetic pyrethroids in runoff and stream water. Environ Toxicol Chem 23:7-11.

[3] Laskowski, D.A. 2002. Physical and chemical properties of pyrethroids. Rev Environ Contam Toxicol 174:49-170.

[4] Racke, K.D. 1993. Environmental fate of chlorpyrifos. Rev Environ Contam Toxicol 131:1-150.

Assuming the San Joaquin River grab samples contain comparable amounts of suspended particulates and DOC, then the concentrations in Figure 1.7 can be divided by a factor of 4.5 to express the value that should be compared against the acute numeric criterion. After adjusting data reported in the figure by the factor of 4.5 it is apparent that for the period 1996 through 2005, there is no exceedence of either the US EPA acute criterion of 0.083 µg/L or the CDFG acute criterion of 0.025 µg/L. For the entire period of record, 1991-2005, there may be only one reported exceedence of either criterion.

Based on all of the preceding considerations, there is insufficient evidence to amend the basin plan as proposed in the Draft Staff Report.

Figure 17: Even though this chart and Figure 1.8 reflect an inappropriate target level (see above and pages 3/4) and the data is not appropriately standardized (see above), additional analysis is merited. The charts reflect historic data back to 1991. During the five-year period from 1991 to 1995, only 21 data points exceeded the 0.025 µg/L level and 64 data point did not exceed this level. It is also important to recognize that 1006 samples showed no residual at all. Therefore, less than 2% of the samples exceeded these extremely low target levels. During the 10-year period from 1996 to 2005, only 10 data points exceeded the target level and 142 data points were below this level. This clearly indicates both a tremendous improvement and that very few excessive points (only four data points since 2003) exist, and these exceeded the 0.025 µg/L level, only by a few thousandths of a µg/L. Even though this is an inappropriately low target level and inconsistent with U.S. EPA, this appears to be very manageable over the next several years.

Page 130: Figure 1.8: Similarly, Figure 1.8 charted the occurrences having both chlorpyrifos and diazinon. This chart similarly shows, from 2000 to 2005, only 24 data points slightly exceeded the toxicity unit line of 1, whereas hundreds of points were below the toxic level, and 650 points were non-detectable whatsoever.

These data represent very improved residue levels which indicate that industry-driven Best Management Practices ("BMPs") are effective and that they must also continue, and that little additional regulatory efforts will be required to make this an effective TMDL.

Thank you for reviewing these comments.

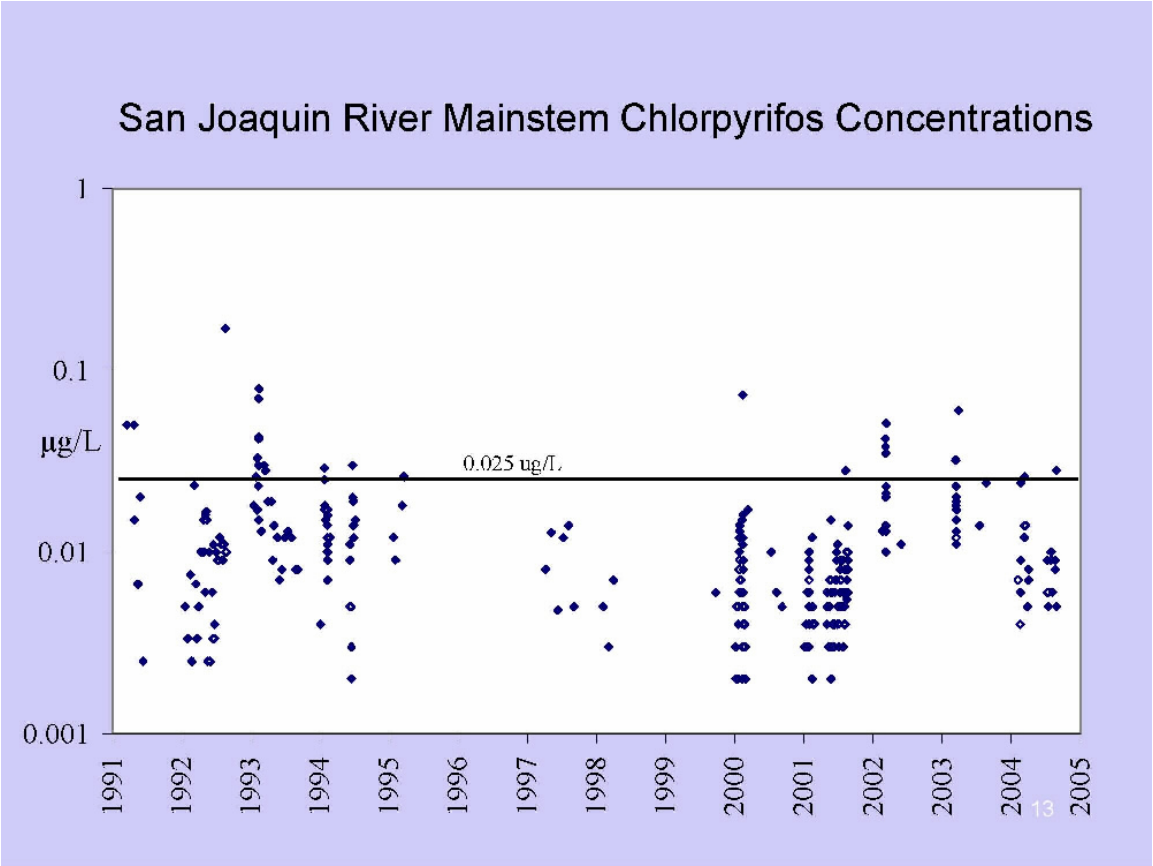
Respectfully submitted,

WILLIAM J. THOMAS, on behalf of
BRYAN L. STUART, Ph.D., Government Relations Manager
Dow AgroSciences LLC

Attachment

cc: Bryan L. Stuart, Ph.D.

ATTACHMENT


San Joaquin River Mainstem Chlorpyrifos Concentrations
1
0.1
µg/L
0.01
0.001
0.025 ug/L
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
13